

Quail Ridge Trail Easement Boardwalk

Design Proposal

Submitted by
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Acton Land Stewardship Committee
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Description

A boardwalk is required to span a seasonal wet area on the 20 foot wide trail easement at Quail Ridge. The boardwalk location in this easement is shown in Figure 1.

Specifications

Boardwalk length: 170 feet

Number of 10 ft. sections: 17

Number of sills: 18

Survey

In the wetland area there are two significant depressions separated by about 40 feet of higher, rocky terrain. It was decided the rocky section would make a difficult foot path so the boardwalk is designed to traverse it. With this in mind a leveled string line was secured to stakes at 10 foot intervals in the wetland area at a height where the boardwalk stringers would clear the rocks. Where the string line reached the higher ground at the wetland extremes determined the boardwalk length of 170 feet. Height of the string line above ground at each stake was recorded and is shown in Figure 2. This will be the height of the sills supporting the boardwalk stringers. The soil was probed at each stake and found to be very firm, not bog like as at Grassy Pond where augured pipe is used in places to support the boardwalk. The probe typically penetrated the soil 2 to 4 inches before striking gravel, roots, and/or rocks.

Design

The boardwalk consists of seventeen 10 ft. long sections decked with 2"x6"x3' planks spaced typically 7/16" mounted on eighteen sills whose height conforms to the topography of the ground surface. A boardwalk section is illustrated in Figure 3 showing two types of sills, one for sill heights less than 15" made up of layers of 6"x6", 4"x6" timbers or combinations of the two and one for sill heights greater than 15" as illustrated in Figure 4. Each bottom sill will be secured with two 5/8" diameter rebar driven at an angle into the soil for stability. Figure 5 illustrates how the stringers are secured to the sills with hardware.

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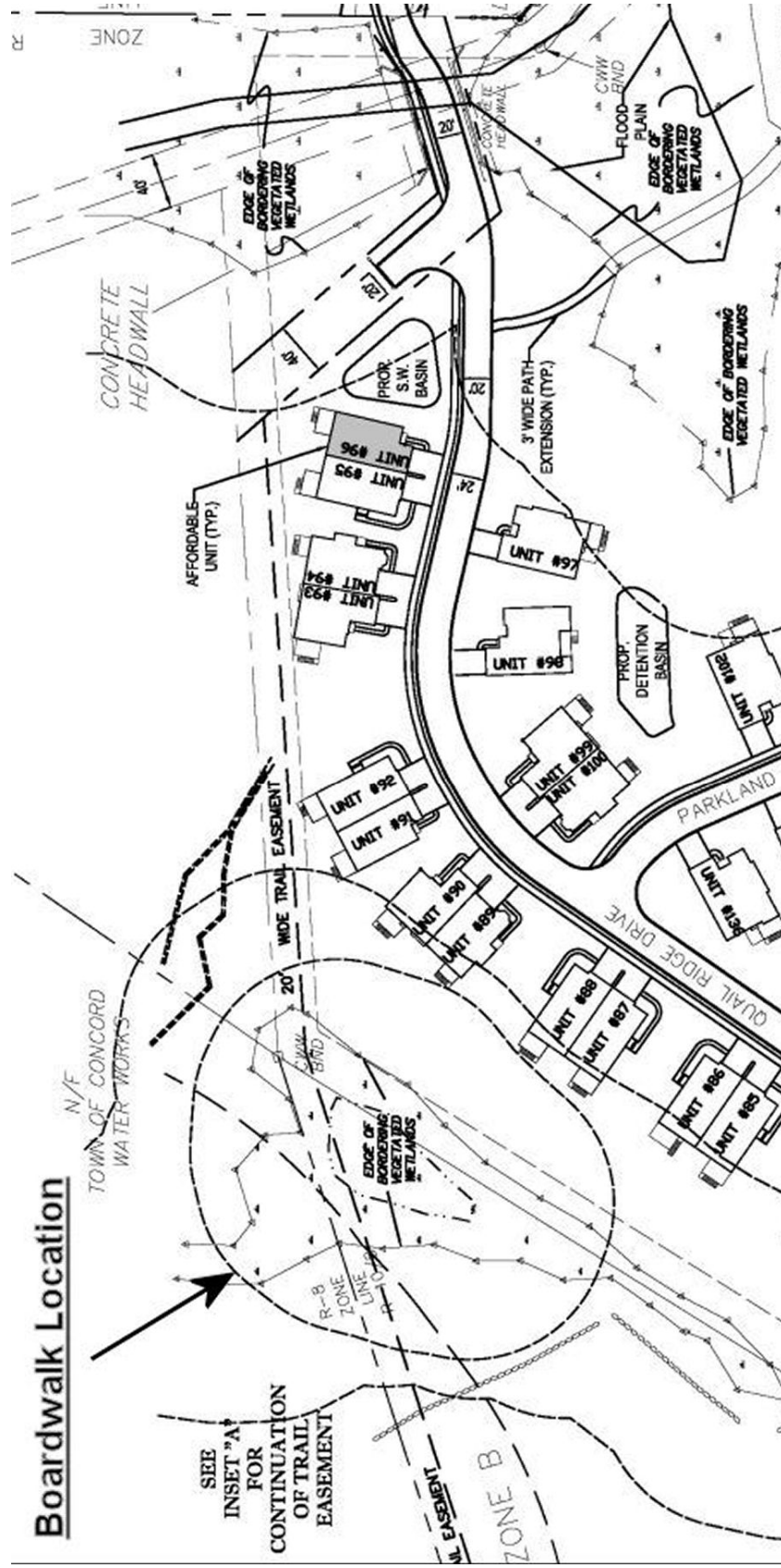


Figure 1 – Location of Boardwalk

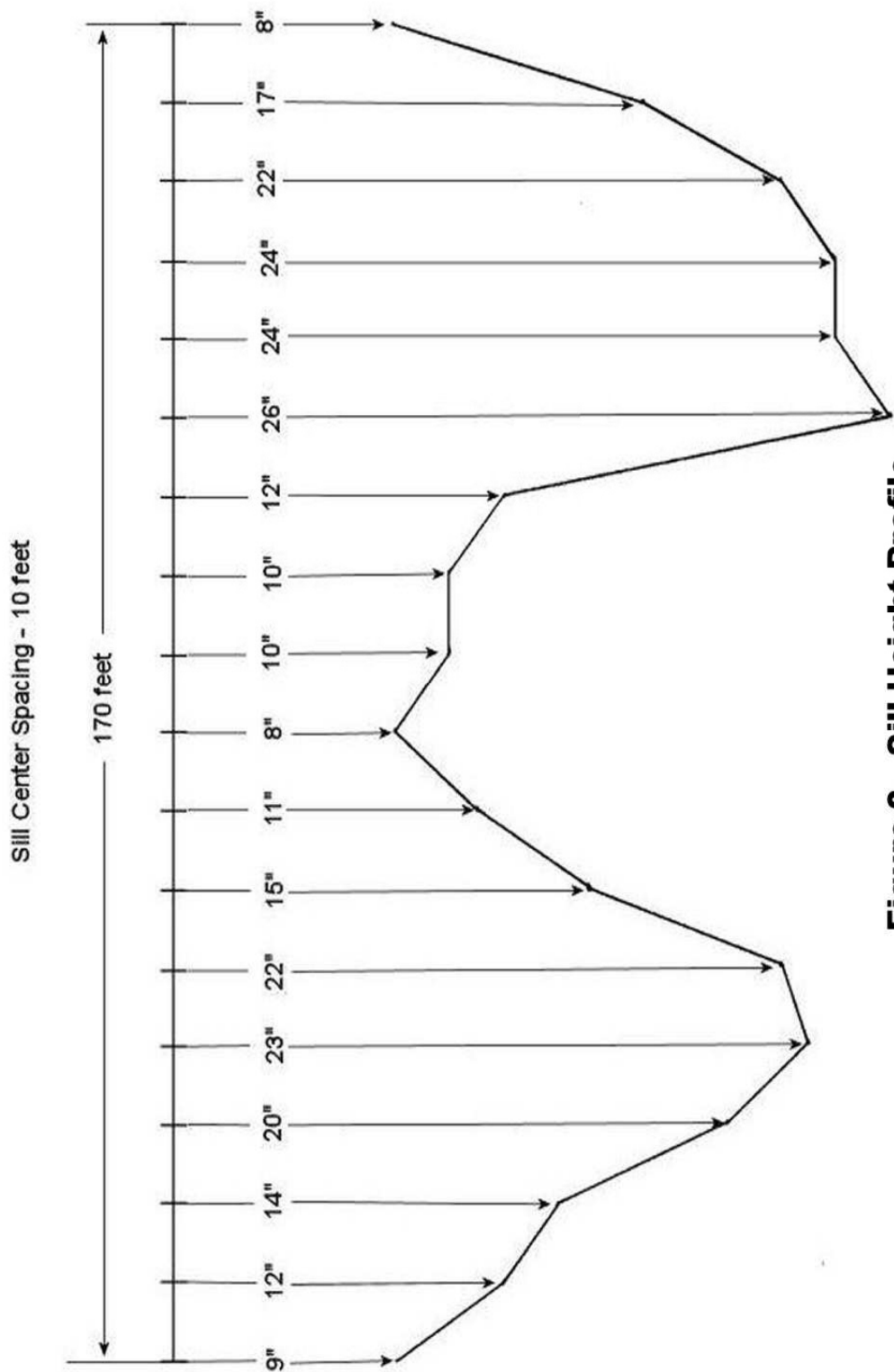


Figure 2 - Sill Height Profile

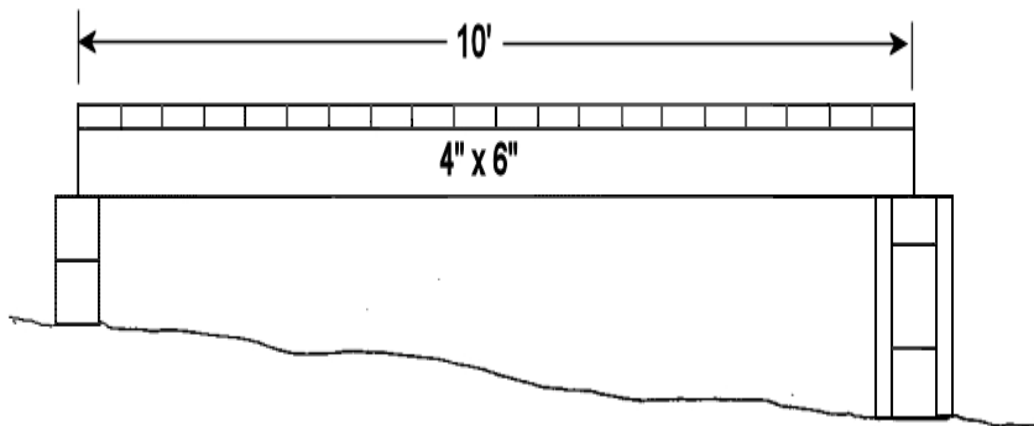


Figure 3 – Boardwalk Section Depicting Decking, Stringers & Sills

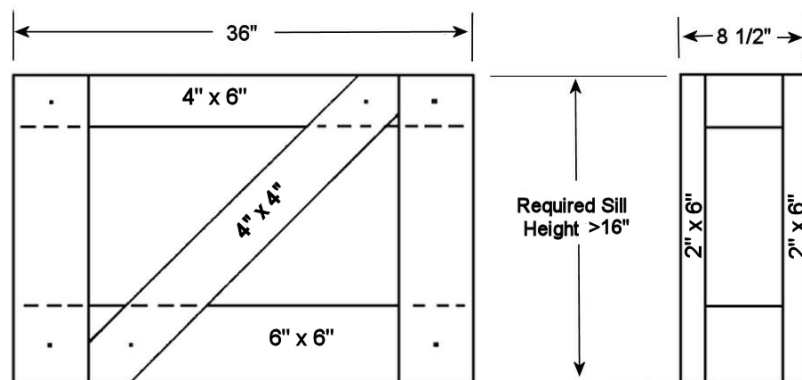


Figure 4 – High Sill Detail

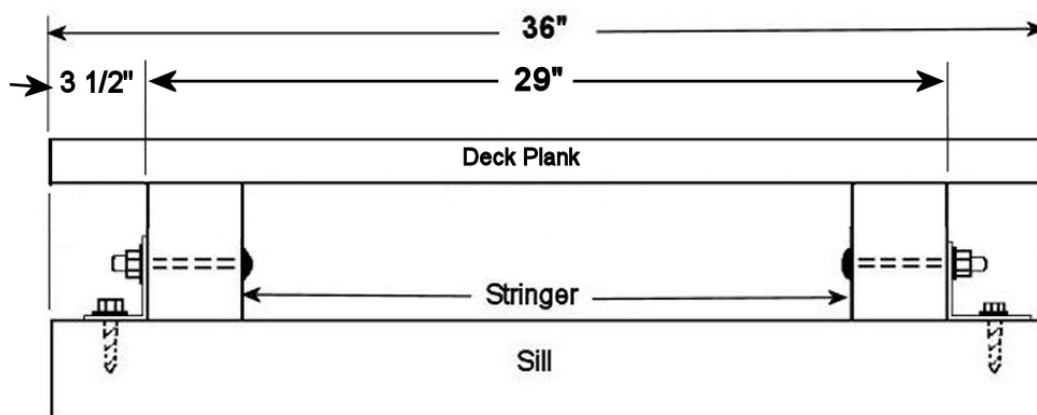


Figure 5 – Stringer-Sill Attachment Detail

Materials

Stringers:

34 – 4"x6"x10' PT ----- @ 12.46 ----- \$423.64

Decking:

85 – 2"x6"x12' PT ----- @ 9.71 ----- \$825.35

Sills:

10 – 6"x6"x12' PT ----- @ 30.30 ----- \$303.00

7 – 4"x6"x12' PT ----- @ 16.00 ----- \$112.00

60 - 2"x6"x12' PT ----- @ 9.71 ----- \$582.60

2 – 2"x4"x12' PT ----- @ 6.57 ----- \$13.14

Hardware:

32 – Simpson Model 66T 5"x6" T strap ----- @ 2.40 ----- \$76.80

32 – 3/8"x2-1/2" galvanized lag screws ----- @ 0.75 ----- \$24.00

64 – 3/8"-16x4-1/2" galvanized carriage bolts----- @ 0.99 ----- \$63.36

16 – 3/8"-16x8" galvanized carriage bolts ----- @ 1.99 ----- \$31.84

32 – 3/8"x10" galvanized carriage bolts ----- @ 2.49 ----- \$79.68

144– 3/8" galvanized flat washers ----- @ 0.20 ----- \$28.80

112 – 3/8"-16 galvanized hex head nuts ----- @ 0.23 ----- \$25.76

30 lbs – 16d (3-1/2") galvanized common nails ----- @ 58.00/30 lbs --- \$58.00

Re-bar, 5/8" dia. (TBD)

Cost \$2,647.97